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Customer Success Is Our Mission

Raytheon Parts Management

28 October 2008

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Agenda

- Parts Management embedded within IPDS
- IPDS overview
  - IPDS Stages
  - IPDS Gates
- Parts Management activities by stage
- Summary

Parts Management - 30,000 Foot View

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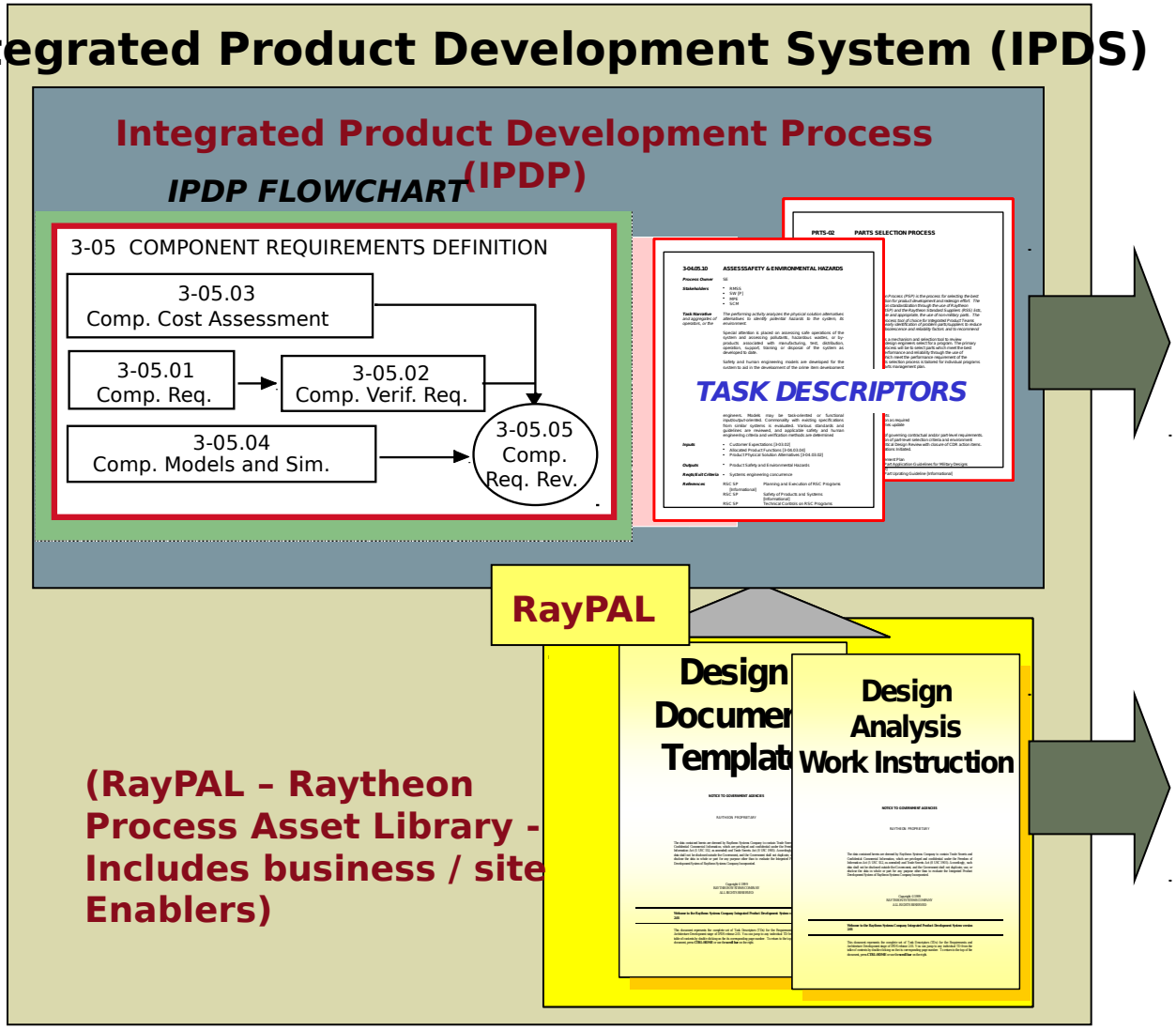
Parts Management is embedded within our Integrated Product Development System (IPDS)

- IPDS is a system of
  - Common processes
  - Process execution assets
  - Reference materials
  - Training materials
  - Deployment materials
  - Support resources
- IPDS serves as Raytheon's process framework for
  - Business capture and proposal development
  - Program planning and execution
  - Product development, manufacture and suppc

Structure of IPDS



IPDP Provides:
Common Process ("What"):

- Flow Diagrams
- Connected I/O
- Gates and Reviews
- Task Descriptors
- Links to RayPAL

RayPAL Provides:
Common & Local Process Materials ("How To"):

- Checklists
- Templates
- Methods
- Work Instructions
- Guidelines
- Tools
- Etc.

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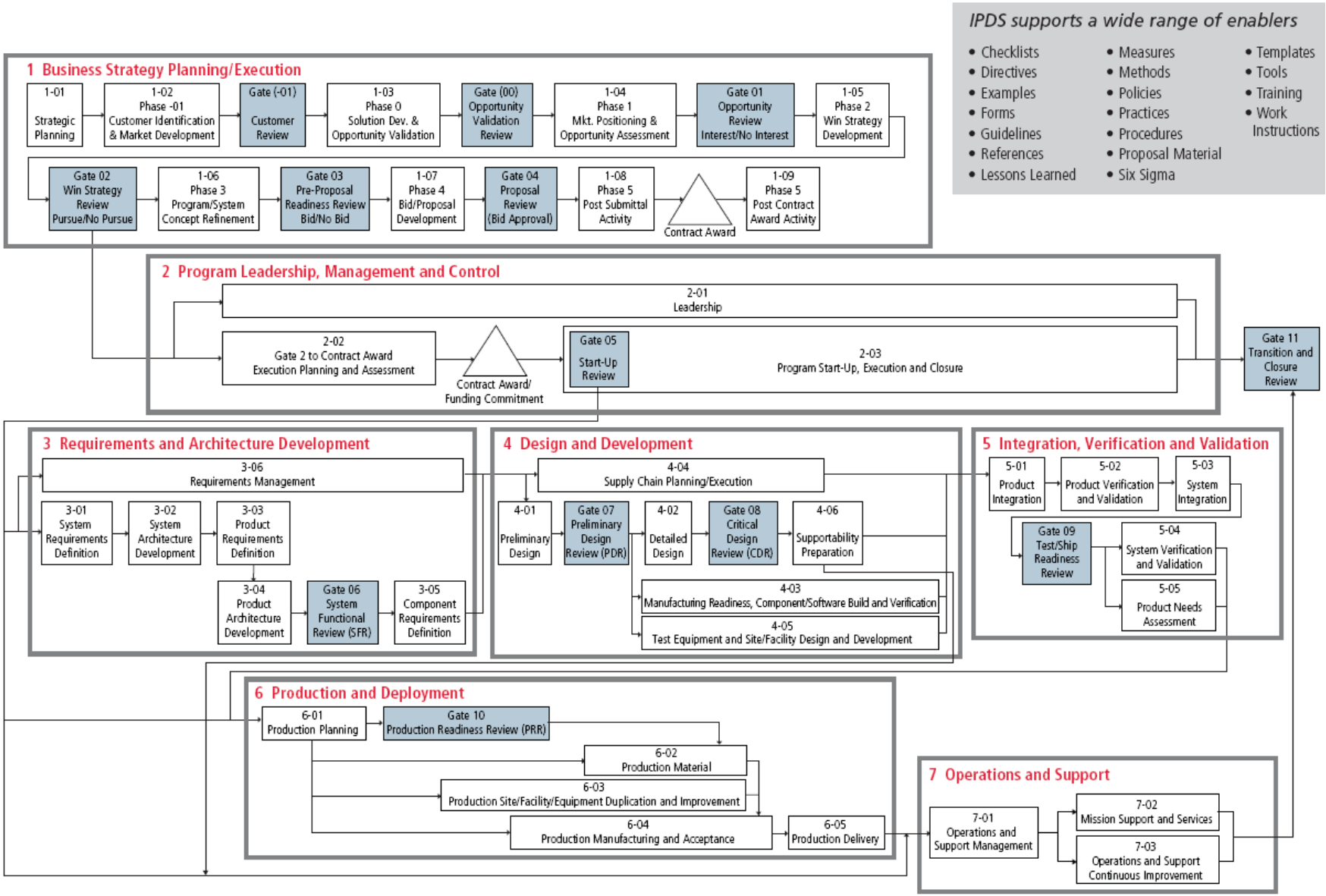
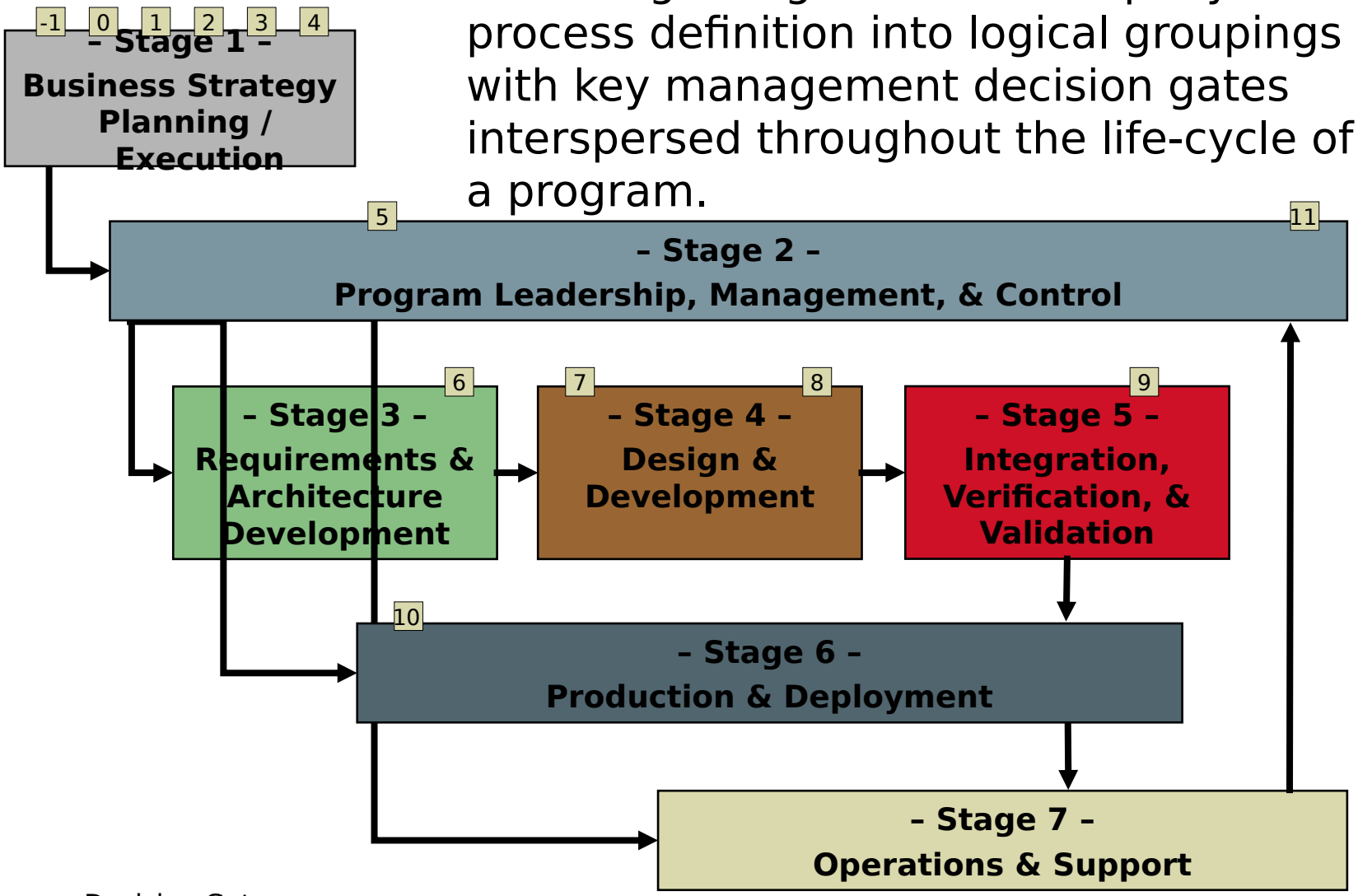
IPDS Stages


IPDS supports a wide range of enablers
• Checklists
• Directives
• Examples
• Forms
• Guidelines
• References
• Lessons Learned
• Measures
• Methods
• Policies
• Practices
• Procedures
• Proposal Material
• Six Sigma
• Templates
• Tools
• Training
• Work Instructions
1 Business Strategy Planning/Execution
1-01 Strategic Planning
1-02 Phase -01 Customer Identification & Market Development
Gate (-01) Customer Review
1-03 Phase 0 Solution Dev. & Opportunity Validation
Gate (00) Opportunity Validation Review
1-04 Phase 1 Mkt. Positioning & Opportunity Assessment
Gate 01 Opportunity Review Interest/No Interest
1-05 Phase 2 Win Strategy Development
Gate 02 Win Strategy Review Pursue/No Pursue
1-06 Phase 3 Program/System Concept Refinement
Gate 03 Pre-Proposal Readiness Review Bid/No Bid
1-07 Phase 4 Bid/Proposal Development
Gate 04 Proposal Review (Bid Approval)
1-08 Phase 5 Post Submittal Activity
Contract Award
1-09 Phase 5 Post Contract Award Activity
2 Program Leadership, Management and Control
2-01 Leadership
2-02 Gate 2 to Contract Award Execution Planning and Assessment
Contract Award/ Funding Commitment
Gate 05 Start-Up Review
2-03 Program Start-Up, Execution and Closure
Gate 11 Transition and Closure Review
3 Requirements and Architecture Development
3-06 Requirements Management
3-01 System Requirements Definition
3-02 System Architecture Development
3-03 Product Requirements Definition
3-04 Product Architecture Development
Gate 06 System Functional Review (SFR)
3-05 Component Requirements Definition
4 Design and Development
4-04 Supply Chain Planning/Execution
4-01 Preliminary Design
Gate 07 Preliminary Design Review (PDR)
4-02 Detailed Design
Gate 08 Critical Design Review (CDR)
4-06 Supportability Preparation
4-03 Manufacturing Readiness, Component/Software Build and Verification
4-05 Test Equipment and Site/Facility Design and Development
5 Integration, Verification and Validation
5-01 Product Integration
5-02 Product Verification and Validation
5-03 System Integration
Gate 09 Test/Ship Readiness Review
5-04 System Verification and Validation
5-05 Product Needs Assessment
6 Production and Deployment
6-01 Production Planning
Gate 10 Production Readiness Review (PRR)
6-02 Production Material
6-03 Production Site/Facility/Equipment Duplication and Improvement
6-04 Production Manufacturing and Acceptance
6-05 Production Delivery
7 Operations and Support
7-01 Operations and Support Management
7-02 Mission Support and Services
7-03 Operations and Support Continuous Improvement

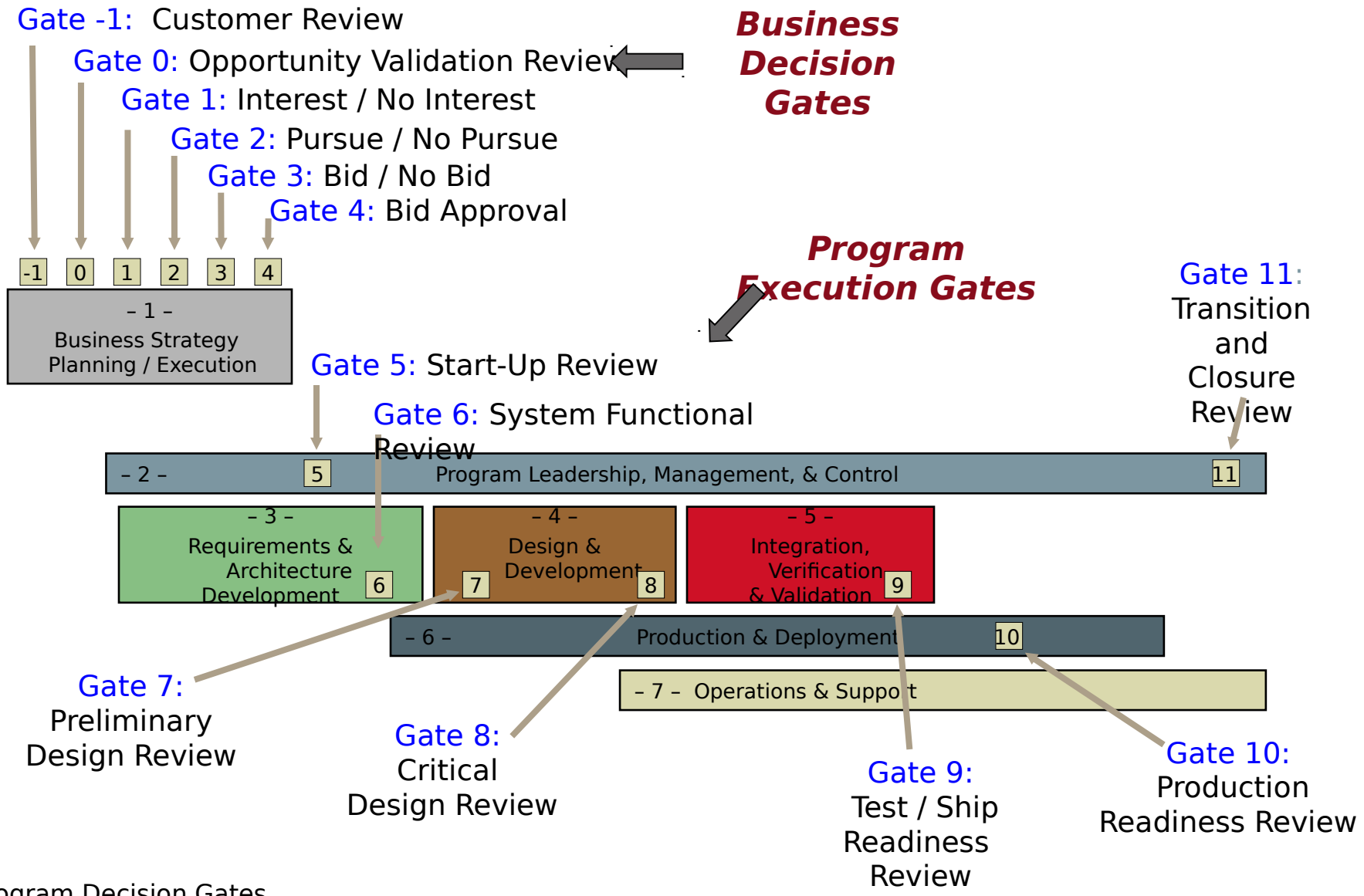
Seven Major Stages

IPDS stages organize the company process definition into logical groupings with key management decision gates interspersed throughout the life-cycle of a program.



Program Decision Gates

Program Level Decision Gates



Program Decision Gates

Program Execution Decision Gates

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- Decision Gates are higher-level management assessments of program maturity and readiness to proceed to the next phase
  - Each Gate is preceded by an Independent Review (IR)
- An IR is a systematic evaluation of product and project maturity, which provides input to the Decision Gate
  - Each IR has a checklist of generic topics to be evaluated during the corresponding program phase
    - Gates 5 through 11 checklists include specific Parts Management assessment items

IRs verify PM tasking completion at key milestones

Stage 1 & 2 Parts Management (PM) Highlights

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– 1 – BUSINESS STRATEGY PLANNING / EXECUTION

MAJOR PM ACTIVITIES

- Identify needed reuse components, based on common architecture and business needs
- Evaluate current / imminent technologies & develop technology roadmaps
- Prepare & characterize initial BOM & identify critical items

KEY PM OUTPUTS

- Reuse Component Development Plans
- Technology Roadmaps
- Material Program Strategy

– 2 – PROGRAM LEADERSHIP MANAGEMENT & CONTROL

MAJOR PM ACTIVITIES

- Manage PM technical effort execution
  - Creation / maintenance of product development plans (e.g., Parts, Materials and Processes Plan)
  - Establish and maintain PM engineering databases and repositories
- Obtain product development plan approvals in accordance with program requirements
- Identify program execution risks due to obsolescence
- Monitor / measure PM progress against project plan

KEY PM OUTPUTS

- Parts, Materials and Processes Plan
- Obsolescence Management Plan
- Tin Whisker Risk Mitigation Plan
- Obsolescence Analysis Reports

Stage 3 & 4 Parts Management (PM) Highlights

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– 3 – REQUIREMENTS & ARCHITECTURE DEVELOPMENT

MAJOR PM ACTIVITIES

- Define parts, materials, and processes design approach & requirements
  - Design criteria, parts control requirements, parts testing requirements, etc.
- Perform system level obsolescence analysis

KEY PM OUTPUTS

- Parts Requirements
- Material and Process Requirements
- Obsolescence Analysis Report

– 4 – DESIGN & DEVELOPMENT

MAJOR PM ACTIVITIES

- Generate specifications for new parts, materials, and processes
- Update approved parts, materials, and process list
- Update non-standard parts list
- Perform obsolescence analysis
- Assess and qualify suppliers

KEY PM OUTPUTS

- Material Specifications
- Part Specifications
- Non-Standard Parts Approval Requests
- Approved Parts, Materials, and Process List
- Obsolescence Analysis Report
- Supplier Assessments

Stage 5, 6 & 7 Parts Management (PM) Highlights

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– 5 – INTEGRATION, VERIFICATION & VALIDATION

MAJOR PM ACTIVITIES

- Perform obsolescence analysis
- Assess BOM for cost effective / standardization replacement opportunities
- Assist corrective action issues relating to test failures

KEY PM OUTPUTS

- Obsolescence Analysis Report
- Manufacturing Technology Assessment

– 6 – PRODUCTION & DEPLOYMENT

MAJOR PM ACTIVITIES

- Perform obsolescence analysis
  - Identify alternatives / mitigation plans
- Assist corrective action issues relating to test failures

KEY PM OUTPUTS

- Obsolescence Analysis Report

– 7 – OPERATIONS & SUPPORT

MAJOR PM ACTIVITIES

- Identify / implement product support driven engineering changes

KEY PM OUTPUTS

- Engineering Change Proposal
- Provisioning Technical Data Package

Summary

- IPDS provides the framework within which our common parts management processes are integrated and deployed
- IPDS Stages organize processes into logical groupings
  - Each stage contains specific parts management functions
- Decision Gates & Independent Reviews ensure parts management processes have been satisfied
  - Proceed to next phase cannot occur without exit criteria resolution